

WHAT IS CLAIMED IS:

1. An ink jet printing head, comprising:

a base;

a nozzle plate defining a plurality of nozzle apertures;

an array of piezoelectric elements, said piezoelectric

5 elements being arranged at predetermined intervals;

wherein each of said piezoelectric elements has one surface that is fixed onto said base and another surface which confronts a respective one of the nozzle apertures of said nozzle plate;

10 wherein said piezoelectric elements are formed by alternately stacking piezoelectric material and conductive material to form a lamination having multiple piezoelectric layers and multiple conductive layers, burning the lamination of said piezoelectric material layers and said conductive
15 material layers to provide a piezoelectric plate, and cutting said piezoelectric plate into a plurality of piezoelectric elements with a predetermined width so that a lamination direction coincides with a main vibrating direction;

wherein the main vibrating direction is a direction
20 extending between the one surface and the other surface through each of said piezoelectric elements;

wherein gaps for storing ink are respectively provided between the other surfaces of said piezoelectric elements and

the respective ones of the nozzle apertures of said nozzle

25 plate;

wherein said piezoelectric elements include a row of said piezoelectric elements alternating between first piezoelectric elements and second piezoelectric elements; and

30 wherein, of said piezoelectric elements, only said first piezoelectric elements are configured to produce an ink jetting force in accordance with print signals supplied to the ink jet printing head.

2. The ink jet printing head according to claim 1, wherein said second piezoelectric elements form structural supports extending a predetermined distance between said base and said nozzle plate.

3. The ink jet printing head according to claim 1, wherein each of the ink storage gaps is uniquely associated with one of said first piezoelectric elements and is segregated from adjacent ones of the ink storage gaps by partitions.

4. The ink jet printing head according to claim 3, wherein said second piezoelectric elements provide said partitions.

5. The ink jet printing head according to claim 2, wherein said second piezoelectric elements are longer in the lamination direction than said first piezoelectric elements.

6. The ink jet printing head according to claim 2, wherein said first piezoelectric elements are wider in a direction perpendicular to the lamination direction than said second piezoelectric elements.

7. An ink jet printing head, comprising:

a base;

a plurality of piezoelectric elements arranged in rows on said base, each row including first piezoelectric elements and second piezoelectric elements alternately arrayed along the row, the first piezoelectric elements being actuatable to apply a compressive force on ink in accordance with print signals, the second piezoelectric elements being fixed and not actuatable by print signals, said first and second

piezoelectric elements having a multilayer structure including laminated layers;

a nozzle plate including nozzles located above said respective first piezoelectric elements; and

ink chamber areas, containing ink, located at least respectively between the nozzles and said first piezoelectric elements.

8. The ink jet printing head according to claim 7, wherein said second piezoelectric elements form structural supports extending a predetermined distance between said base and said nozzle plate.

9. The ink jet printing head according to claim 7, wherein each of the ink chamber areas is uniquely associated with one of said first piezoelectric elements and is segregated from adjacent ones of the ink chamber areas by partitions.

10. The ink jet printing head according to claim 9, wherein said second piezoelectric elements provide said partitions.